Space Weather Forecast

Issued on Monday, 02 September 2024 at 00:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate-class flares expected, slight chance of Strong flares. Chance of reaching S1/Solar radiation Storm levels on Day 1 (02 Sep).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate with five Moderate-class flares in the past 24hrs, peaking with a long period Moderate-class flare at 01/1322UTC from the southeastern limb. There are thirteen sunspot regions on the disc. The large region in the southeast has increased its magnetic complexity a little. A region is the southwest is the largest on the disc, with some consolidation of its intermediate spots. A new region is rotating around the southeastern limb, and has the potential to be complex. All other regions are relatively simple and stable, or showing some signs of decay.

No Earth directed Coronal Mass Ejections (CMEs) have been observed. A large eruption off the southeastern limb this afternoon has been analysed as having no Earth directed component.

Solar Wind / Geomagnetic Activity: Solar wind parameters have eased after recent enhancements. Wind speeds were at slow-ambient to slightly elevated levels, currently around 390-430km/s. The Interplanetary Magnetic Field eased from moderate to weak levels. The important north-south component was weak throughout, generally negative (southward directed). Geomagnetic activity was Quiet to Active (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained near background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is expected with a slight chance of isolated Strong flares. The main flare risk is currently from the two larger sunspot regions on the disc, as well as a new region rotating around the southeastern limb.

Solar Wind /Geomagnetic Activity: There are no Earth-directed CMEs currently expected. The recent enhancement has now eased, although winds remain slightly elevated. The next enhancement is expected on Day 1 (02 Sep) from a narrow equatorial coronal hole. Any significant enhancement is unlikely, however.

Mainly Quiet to Unsettled (Kp2-3) activity is expected on Day 1 (02 Sep), with a chance of Active (Kp4) intervals and only a very slight chance of G1/Minor Storm intervals (Kp5) should we see any prolonged fast wind influence. This risk decreasing from Day 2 (03 Sep), with generally Quiet (Kp1-2) activity expected thereafter.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain mostly at background levels, with a chance of exceeding the S1/Minor Radiation Storm threshold.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	75	75
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	10	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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